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In Vitro Haploid Production in Higher Plants

Vol. 2: Applications

edited by **S. Mohan Jain,** *University of Helsinki, Dept. of Plant Production, Finland*; **S.K. Sopory,** *School of Life Science, Jawaharlal Nehru University, New Delhi, India*; **R.E. Veilleux,** *Dept. of Horticulture, Virginia Polytechnic Institute and State University, Blacksburg, USA*

CURRENT PLANT SCIENCE AND BIOTECHNOLOGY IN AGRICULTURE 24

This second volume of *In Vitro Haploid Production in Higher Plants* is broadly concerned with special applications and phenomena uniquely associated with haploid plants and their derivation. The first section (18 chapters) covers such topics as genetic stability of microspore-derived doubled haploids, transformation of pollen and microspores, gametoclonal variation, bread-making quality of wheat doubled haploids, DNA amplification of doubled haploids, RFLP mapping with haploids, genetics of green plant regeneration from anther culture, combining mutation breeding with haploidy for the improvement of rapeseed, segregation distortion among anther-derived plants, chromosome engineering, self-incompatibility and pollen rejection, statistical models for the detection of quantitative trait loci, haploid protoplasts, gametosomatic hybrids, potential of using dihaploid/diploid genotypes in breeding potato by somatic hybridization, cryopreservation, prospects of microspore-derived embryos for artificial seeds and the future prospects for crop improvement through anther and microspore culture. Section 2 (3 chapters) is concerned with genetic transformation of wheat and *Petunia* via pollen, and rice through microspore-derived protoplasts.

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Section 1: 1. Genetic stability of microspore derived doubled haploids; *S.J. Louge.* **2.** Transformation of pollen and microspores a review; *W. A. Harwood, et al.* **3.** Gametoclonal variation in crop improvement; *B. Huang.* **4.** Breadmaking quality of doubled haploid lines of wheat; *Z. Bedo, et al.* **5.** DNA amplification of doubled haploids of *Nicotiana*; *S.M. Reed.* **6.** RFLP-mapping the haploid genome of barley (*Hordeum vulgare* L.); *A. Graner.* **7.** Mutation and selection for improved oil and meal quality in *Brassica napus* utilizing microspore culture; *L. Kott, et al.* **8.** Genetics of green plant regeneration from anther culture in cereals; *H. Zhou.* **9.** Segregation distortion in androgenic plants; *N. Foisset, R. Delourme.* **10.** Chromosome engineering in the triticeae using pollen derived plants; *Hu Han.* **11.** Self incompatibility and pollen rejection in angiosperms; *A. McCubbin, T.H. Kao.* **12.** Statistical models for the detection of genes controlling quantitative trait loci expression; *E.A. Carbonell, M.J. Asins.* **13.** Haploid protoplasts: pollen protoplasts; *I. Tanaka.* **14.** Somatic-gameto protoplast fusion; *M.K. Davey.* **15.** The potentials of using dihaploid/diploid genotypes in breeding potato by somatic hybridization; *S. Waara.* **16.** Cryopreservation of androgenics in vitro cultured of cereals; *H. Lorz.* **17.** Artificial seeds from microspore derived embryos of cereals; *S.K. Datta.* **18.** Future prospects for crop improvement through anther and microspore culture; *K.N. Kao.* **Section 2: 19.** Genetic transformation of Petunia via pollen; *D. Hess.* **20.** Genetic transformation of wheat via pollen; *D. Hess.* **21.** Genetic transformation of rice from protoplasts of haploid origin; *S.K. Datta.*

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